

Weekly Report for 10/27/2014

APS Renewal and Upgrade

- Discuss issues on Lambertson magnet design with Melike. (Aimin Xiao)
- Write APSU related paper abstracts for IPAC15 (Aimin Xiao)
- Set up injection simulation with new error sets and check the preliminary results. (Aimin Xiao)
- Tuning of V6 lattice for better performance (lifetime and DA). (Yipeng Sun)
- MOGA optimization of V6 lattice, with octupoles. (Yipeng Sun)
- Linear optics matching of tweaked V6 lattice. (Yipeng Sun)

MCR Operations

Storage Ring Operations

- Investigated IEX user beam orbit drift. There is some 70 um drift over 5 m in horizontal plane. (Aimin Xiao)

Linac Operations

- Still having an issue triggering the laser in Test RF RF mode. Will bring this up next week when A. Pietryla is back from vacation. (Jeff Dooling)
- Prepared for pc gun laser alignment work; requested additional time for this during injector studies. (Jeff Dooling)
- worked on the set up the APS operation thermionic gun 3G3 (used to be RG2) in the vacuum lab, worked with the vacuum group techs to pace the thermal couples as used in previous gun (3G2 and 3G1) LLRF measurements, worked with RF group colleague and Dooling to get the proper rf feed-through and cable for S11 measurements. Took low level RF measurements of the gun pi-mode frequency and the two neighbouring resonance modes frequencies at various gun body temperature and cathode heater power. Work on going. (Yin-e Sun)

MCR Operations administrative/misc.

- Conducted interviews and tours of several operator candidates. (Randy Flood)

APS Machine Studies

Storage Ring Studies

- Joined SCU0 quench orbit measurement study and local impedance measurement study. (Aimin Xiao)

Linac Studies

- Took injector studies shift to tune up RG1 for APS operations. Optimized RG1 front end focusing and steering for maximum charge transmission through the alpha-magnet and down to the end of the linac. Upon proper phasing of the linac accelerating structures, took beam emittance measurements using the high resolution screens downstream of the chicane. Performed betatron function corrections using the four quadrupoles following the chicane. (Yin-e Sun)

APS Machine Research and Development

Storage Ring Research and Development

- Worked on calibration analysis of ID1 BLM data. (Jeff Dooling)

- Read SCU paper and reports. Discuss various issues with Louis. (Aimin Xiao)

Linac Research and Development

- Took shifts in the PC gun drive-laser alignment during injector studies in the linac during controlled access. Worked with Dooling to: (1) send the UV laser from the laser room to the linac drive-laser optics table; (2) set up the alignment target and camera for green alignment laser; (3) set up virtual cathode to diagnose the uv drive-laser transverse profile; (4) located positions for penetrations on the laser table enclosure for the laser-injection port and cathode-inspection port on the PC gun beamline. (Yin-e Sun)

ITS Research and Development

- Started work on RadiaBeam ITS THz lattice for elegant modeling. Checked polarity of ITS quads for RadiaBeam with Yine Sun. (Jeff Dooling)
- Provided physicist's advice to the alignment (on locations of the magnets) and diagnostics groups during the beam line installation for the Radiabeam THz radiation experiment at the ITS. (Yin-e Sun)
- Measured the new and existing quadrupole polarities using a Hall probe for the THz experiment (with Dooling). (Yin-e Sun)

APS Machine Software

Storage Ring

- we had following problem with MXA-VSA tune measurement (it happened every several measurements) 1) no data 2) wrong data 3) socket connection errors, tried with different commands combinations, improved MXA-VSA tune measurement and fixed these problems through 1) combined lines of socket commands into one long command thus reduce the number of socket connections -- we had tested with continuously 100 times tune measurement, no errors occurred since this change. 2) added check MXA waveform datapoints and wait until there is data before taking data, this avoids reading empty data 3) added waiting time after reducing P0Feedback gain to make sure that correct data is taken. After 100 times tune measurement testing, installed HPVSAATunes.tcl and getxytunes. (Hairong Shang)
- tested SRGrixBPMCalibration for vertical and horizontal beam scan, made changes to be able to select P0 or P1 bpps for scan, and added "Select File" button to select scanned data for post-processing and review. (Hairong Shang)
- added printing error messages to getxytunes when return with errors. (Hairong Shang)
- added setting P0 feedback waveform and gain waveform average PVs to APSMpPARMeasTunes.tcl, and added the related PVs to P0Feedback data logger. (Hairong Shang)

Publications, papers and report

- Published one paper on PRSTAB. (Yipeng Sun)

Education, Mentoring and outreach

- provided assistance to the graduate student at AWA on running wake field simulation in ASTRA to include both monopole and dipole wakefields. (Yin-e Sun)

Miscellaneous

- attended EPICS training course. (Hairong Shang)

- studying Python. (Hairong Shang)